

Student Name:

Student id:

Sect:

Serial#:

University of Bahrain  
College of Information Technology  
Department of Computer Science

ITCS241: Assembly Language Programming

Arithmetic Instructions

Quiz #3

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QUESTION ONE: Given the array:

MY\_A WORDS 50 DUP (6070H, 9FACH)

Write a sequence of instructions to subtract 20 from every second word, i.e. words with numbers: 0, 2, 4, ...

MOV CX, LENGTHOF MY\_A/2

MOV SI, 0

NEXT: SUB MY\_A[SI], 20

ADD SI, 4

LOOP NEXT

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ITCS241: Assembly Programming

Assembly Fundamentals

Quiz #3

Study carefully the following definition of array ME and answer all questions below.

ME SWORD <sup>FFFF</sup> -9, 7E39H, 3070H, (4050H, 98DFH, -20, 32F4H, 0F234H)

- 13) The error with this statement "add ah, ME[2]" is Different operands size.
- 14) After executing "sub ME[6], 4000H", the carry flag becomes 0 and the sign flag becomes 0.
- 15) Give 1 instruction to add 33CCH to the third word of array ME add ME[4], 33CCH
- 16) Give 1 instruction to subtract FCECH from the first word of array ME sub ME[0], 0FCEH
- 17) Give 1 instruction to swap the contents of CX register with the last word of array ME xchg cx, ME[14]
- 18) Give 1 statement that causes the assembler to calculate the count of elements in array ME and to store it in a constant named UUU UUU equ (\$ - ME) / 2 or length of ME
- 19) Give 1 instruction to store in BX the offset address of fifth word mov bx, offset ME + 8
- 20) Give 1 instruction to store in AX the contents of the last word of array ME mov ax, ME + 14
- 21) Give 1 instruction to add 1 to the second word of array ME inc word ptr ME + 2
- 22) Give no more than 2 instructions to store in the second word the difference between the second and fifth words of array ME: mov ax, ME[8] or mov ax, ME + 8  
sub ME[2], ax sub ME + 2, ax
- 23) The 2 types of labels are: code label and data label.
- 24) The number of bytes occupied by "H sword 20, 2 dup(1, 2, 4, 4 dup(33, 44, 55), 99)" is 33 \* 2 = 66

mov ax, ME + 8

sub ME + 2, ax



Serial#

## Quiz #3

- The error with this statement "add ME[6], ME[2]" is 2 MEMORY OPERANDS.
- After executing "sub ME[10], 5000H", the carry flag becomes 1 and the sign flag becomes (1).
- Give 1 instruction to add 6666H to the sixth word of array ME add ME[10], 6666H
- Give 1 instruction to subtract 5555H from the last word of array ME sub ME[14], 5555H
- Give 1 instruction to swap the contents of BX with the third word of array ME  
xchg BX, ME[4]
- Give 1 instruction to store in DI the offset address of array ME mov DI, OFFSET ME
- Give 1 instruction to store in BX the last word of array ME mov BX, ME[14]
- Give 1 instruction to subtract 1 from the fourth word of array ME dec ME[6]
- Give no more than 2 instructions to store in AX the sum of the third and sixth words of array ME:  
mov AX, ME[4]      mov ax, ME[4]  
add AX, ME[10]      add ax, ME[10]
- The 2 types of assembly statements are: DIRECTIVES and INSTRUCTION:
- The number of bytes occupied by "H dword 20, 2 dup(1, 2, 4, 2 dup(33, 44, 55), 99)" is 84
- Give 1 statement that causes the assembler to calculate the count of bytes in array ME and to store it in a constant named RRR RRR EQU (SIZEOF ME) or RRR EQU \$ - ME

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Quiz #3: Arithmetic Instructions

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QUESTION ONE: Assume that

F1 sbyte ?  
F2 sbyte ?

Write a sequence of statements to define and calculate the value of  $F$  as shown in the next equation. (Not allowed to change F1 and F2).

$$F = (F2 * F1) / (F2 - (F2 \% F1))$$

F sbyte ?

```
MOVSBX AX, F2
IDIV F1
MOV CL, AX F2
SUB CL, ah ; CL = (F2 - (F2 % F1))
MOV AL, F1
INVL INVL F2 ; AX = F1 * F2
IDIV CL
MOV F, AL
```

QUESTION TWO: What would be in the indicated registers after executing each of the following codes.

All answers MUST be in HEXADECIMAL

a) MOV AX, 602FH  
MOV BX, C0A0H  
DIV BH

AX = 2F 80

b) MOV AL, 70H  
CBW  
MOV DL, 0B0H  
IMUL DL

AX = dd 00

$$\frac{6000}{C0} + \frac{2F}{C0}$$

$$70 * 50 = 2300$$

dd 00